

August 3, 2017

VIA ECFS

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Re: Wireless E911 Location Accuracy Requirements (PS Docket No. 07-114)

Dear Ms. Dortch:

In accordance with the Federal Communications Commission's ("FCC" or the "Commission") Wireless E911 Location Accuracy Requirements adopted in the Commission's *Fourth Report and Order*¹, specifically 47 C.F.R. §§ 20.18(i)(4)(i) and 20.18(i)(4)(ii), Southern Communications Services, Inc. d/b/a Southern Linc ("Southern Linc" or the "Company") hereby files the attached implementation plan and progress report (the "Plan") in the above-referenced docket.

Please contact my office at (678) 443-1500 if you have any questions.

Respectfully,

/s/ Michael Rosenthal

Michael D. Rosenthal
Director of Legal & External Affairs

Southern Linc
5555 Glenridge Connector, Suite 500
Atlanta, Georgia 30342

¹ See *Wireless E911 Location Accuracy Requirements*, Fourth Report and Order, 30 FCC Rcd 1259 (2015) (*Fourth Report and Order*) and rules 47 C.F.R. § 20.18(i) *et seq.*

SOUTHERN LINC IMPLEMENTATION PLAN AND PROGRESS REPORT

I. INTRODUCTION

Southern Communications Services, Inc. d/b/a Southern Linc (“Southern Linc”) is a wholly owned subsidiary of Southern Company. Southern Linc operates a commercial digital 800 MHz ESMR system to provide interconnected voice, dispatch, push-to-talk, text and picture messaging, internet access, and data transmission services over the same handset. Southern Linc provides these services over a 127,000 square mile service territory covering Georgia, Alabama, southeastern Mississippi, and the Florida panhandle. Southern Linc offers comprehensive geographic coverage, serving the extensive rural territory within its footprint as well as major metropolitan areas and highway corridors. Because of its expansive and reliable coverage within the region, Southern Linc’s service is widely used by local and statewide public safety agencies, school districts, rural local governments, public utilities, and other emergency responders. As such, the Company is committed to the FCC’s goals of improving E911 location accuracy to better serve its customers during emergencies. Additionally, Southern Linc is utilized by other commercial entities in both urban and rural areas. The Company is in the process of transitioning its network from the iDEN air interface to an all-LTE platform.

The FCC adopted its *Fourth Report and Order*² in January of 2015, requiring CMRS providers to report their implementation plans and progress towards improving indoor location accuracy.³ This Plan outlines Southern Linc’s activities, objectives, and intentions in furtherance of indoor location accuracy as well as the status of Southern Linc’s progress towards meeting the Commission’s indoor location accuracy goals.

II. HORIZONTAL LOCATION ACCURACY REQUIREMENTS

FCC rules allow delivery of either dispatchable location or x/y location within 50 meter accuracy.⁴ Southern Linc must provide a dispatchable location or x/y location within 50 meters for the following percentages of all wireless 911 calls by the deadlines specified:

- 40% of all wireless 911 calls by April 3, 2017;
- 50% of all wireless 911 calls by April 3, 2018;
- 70% of all wireless 911 calls by April 3, 2020; and
- 80% of all wireless 911 calls by April 3, 2021.⁵

² See *Wireless E911 Location Accuracy Requirements*, Fourth Report and Order, 30 FCC Rcd 1259 (2015) (*Fourth Report and Order*).

³ See 47 C.F.R. §§ 20.18(i)(4)(i) – (ii).

⁴ See 47 C.F.R. § 20.18(i)(2)(i).

⁵ *Id.*

A. Dispatchable Location

The Commission defines dispatchable location as the verified or corroborated street address of the calling party plus additional information such as floor, suite, apartment or similar information that may be needed to adequately identify the location of the calling party.⁶ Dispatchable location solutions provide the verified street address plus additional location information of wireless access points, e.g., from WiFi and Bluetooth. Such additional location information will be provided by the National Emergency Address Database (“NEAD”) in order to support service providers’ ability to produce a dispatchable location for public safety answering points (“PSAPs”).

1. NEAD

At the direction of the nationwide wireless carriers, CTIA established the NEAD LLC as an independent company to administer and operate the NEAD consistent with the FCC’s rules.⁷ In October 2015, NEAD LLC selected ATIS as the NEAD program manager. In October 2016, NEAD LLC selected West Safety Services (“West”) as the NEAD vendor/operator. West will implement the NEAD platform in accordance with the FCC’s location accuracy rules, including privacy and security requirements, and relevant technical standards.

Population of the NEAD with wireless access point information and initial testing for querying the NEAD will occur among the nationwide wireless carriers first. Non-nationwide carriers, Southern Linc included, will be able to populate the NEAD and gain access to query the NEAD at a later time. At such time, Southern Linc intends to contribute the necessary information for Southern Linc-maintained WiFi access points to be populated into the NEAD. Southern Linc will work with West for training and technical data requirements for populating the NEAD with access points. NEAD LLC expects that outreach and engagement with other wireless access point owners and administrators (e.g., broadband service providers, large enterprises, public institutions, etc.) will be a wide-ranging, multi-stakeholder, and multi-year effort.

The NEAD solution also requires that devices transmit available WiFi and other access point information to the service provider’s network when the user calls 911. Some wireless devices in the marketplace today have the capability to identify the presence of access points within relatively close proximity. Southern Linc has incorporated this capability into the specifications for its devices and is working closely with its device manufacturer to incorporate this capability into future device models.

⁶ *Fourth Report and Order* at ¶ 44.

⁷ *Id* at ¶¶ 54-59.

Southern Linc currently retains West as its 911 emergency services vendor. Thus, the Company's wireless 911 location server should work with the NEAD once the NEAD is operational. Southern Linc expects to be able to begin use of the NEAD to provide dispatchable location to PSAPs once the NEAD goes live.

B. X/Y Coordinates

In addition to incorporating dispatchable location capabilities, Southern Linc intends to improve the accuracy of x/y coordinates delivered to PSAPs by supplementing its existing Assisted-Global Positioning System ("A-GPS") solution already deployed throughout its iDEN network. Southern Linc is evaluating deploying additional location technologies on its LTE network, including device-based location technologies and emerging location technologies further discussed in Section IV below.

1. Test Bed

The nationwide wireless carriers established an independently administered and transparent indoor test bed ("Test Bed") as required by the FCC's *Fourth Report and Order*.⁸ The Test Bed verifies how wireless 911 location technologies and solutions perform against the FCC's location accuracy requirements for wireless calls to 911 made from indoor locations. Similar to the NEAD, CTIA established the Test Bed LLC as an independent company to administer and operate the Test Bed consistent with the FCC's rules. Test Bed LLC selected ATIS as the Test Bed program manager. And in March 2016, Test Bed LLC selected LCC Design Services (a Tech Mahindra Company) to administer and execute the Test Bed.

Consistent with ATIS Emergency Services Interconnection Forum (ESIF) recommendations, indoor testing occurred across four morphologies (i.e., dense urban, urban, suburban, and rural) in two testing regions (i.e., Atlanta, Georgia and San Francisco, California). Stage 1 of Test Bed testing was conducted by the nationwide wireless carriers and included testing of the existing location technologies currently deployed. Stage 2 of Test Bed testing involved testing emerging location technologies (i.e., WiFi based, WiFi/A-GPS hybrid, device-based hybrid, and beacon/A-GPS hybrid) from four vendors (i.e., NextNav, Polaris, Nokia HERE, and TruePosition/SkyHook). Future stages of the Test Bed will involve testing of dispatchable location solutions and z-axis technologies.

Southern Linc supports the implementation and ongoing operation of the location accuracy Test Bed and will support the testing and implementation of E911 location solution vendors' technologies through its network where feasible. Additionally, pursuant to 47 C.F.R. §

⁸ See *Fourth Report and Order* Section III.B.5.

20.18(i)(3), Southern Linc utilizes Test Bed data in order to provide its certifications in compliance with 47 C.F.R. § 20.18(i)(2)(iii).

2. A-GPS

Southern Linc's A-GPS solution currently uses one global navigation satellite system ("GNSS") constellation for 911 location accuracy, the U.S. government-operated GPS. Enhancing A-GPS through the addition of additional GNSS constellations will help improve accuracy and availability of resulting location measurements. However, use of GLONASS or any other non-U.S. GNSS constellation is not permitted. If necessary government coordination efforts enable service providers to use GLONASS or other non-U.S. GNSS constellations for 911 location accuracy purposes and if such use is determined by the Company to be appropriate and sufficiently secure, then Southern Linc will implement this enhanced A-GPS solution.

III. VERTICAL LOCATION ACCURACY REQUIREMENTS

FCC requirements for vertical location accuracy may be met by either ensuring that the NEAD is populated with a sufficient number of total dispatchable location reference points in the most populous service areas or by deploying a vertical "z-axis" technology across sufficient coverage within those service areas.⁹ Additionally, service providers must make uncompensated barometric data available to PSAPs for any 911 call placed from any device that has the capability to deliver such barometric sensor information.¹⁰ Southern Linc's specific deadlines for meeting the Commission's vertical location accuracy requirements are as follows:

- By August 3, 2018, make uncompensated barometric data available to PSAPs;
- By April 3, 2022, in the Atlanta CMA, deploy either dispatchable location or z-axis technology in compliance with any z-axis accuracy metric approved by the FCC; and
- By April 3, 2024, in the Atlanta and Birmingham CMAs, deploy either dispatchable location or z-axis technology in compliance with any z-axis accuracy metric approved by the FCC.¹¹

A. Uncompensated Barometric Data

Southern Linc will make uncompensated barometric data available to PSAPs for any 911 call from any device that has the capability to deliver barometric sensor information. Southern Linc intends to evaluate the implementation of necessary protocols in its 911 server, including any necessary software installations or updates, which would enable a device to transmit its

⁹ See 47 C.F.R. § 20.18(i)(2)(ii).

¹⁰ *Id.*

¹¹ *Id.*

Uncompensated Barometric Pressure (“UBP”) information back to Linc’s network for delivery to PSAPs. Southern Linc is working closely with its device manufacturer in evaluating incorporation of this capability into future device models.

B. Dispatchable Location

Dispatchable location solutions will include vertical z-axis information, e.g., floor, suite, apartment number, etc. of the 911 caller. Therefore, Southern Linc’s plans and progress described above in Section II.A. for horizontal location accuracy requirements are the same for Southern Linc’s efforts to meet the Commission’s vertical location accuracy requirements. Southern Linc supports the efforts of NEAD LLC, ATIS, and West in developing the NEAD platform and looks forward to such time that non-nationwide carriers may access and query the NEAD in order to provide dispatchable locations to PSAPs.

C. Z-Axis

Southern Linc supports the development and testing of new z-axis location technologies and will evaluate the feasibility of implementation of such z-axis solutions in its network or devices as appropriate. Southern Linc looks forward to assessing the data from future stages of Test Bed testing of z-axis technologies developed by vendors such as Polaris and NextNav. The Company plans to provide z-axis data using z-axis technologies that are verified by the Test Bed to be compliant with future z-axis accuracy metrics approved by the Commission.

IV. EMERGING TECHNOLOGIES AND OTHER EFFORTS

As mentioned, Southern Linc is currently transitioning from its iDEN network to an all-LTE platform. Transition to LTE will enable Southern Linc to consider deployment of additional location technologies, both network- and device- based, beyond A-GPS to improve indoor location accuracy. Southern Linc will evaluate viability of location technologies such as Device Based Hybrid (“DBH”), Observed Time Difference of Arrival (“OTDOA”), WiFi/A-GPS hybrid solutions, and beacon/A-GPS hybrid solutions.

DBH technologies take advantage of various technologies – A-GPS, Bluetooth, WiFi, accelerometers, barometers, etc. – to generate highly accurate x/y coordinates to transmit to PSAPs. Southern Linc eagerly awaits vendors to provide DBH solutions in additional devices in the coming years. OTDOA uses highly detectable Positioning Reference Signals (“PRS”) to estimate a caller’s location by using the time differences between PRS received from known locations of cell sites. Southern Linc is evaluating use of OTDOA in its LTE network which would improve location accuracy as additional LTE cell sites are deployed. Southern Linc is open to evaluating implementation of other emerging location technologies as they become available.

Southern Linc is also currently assessing implementation of location solutions provided by LaaSer Critical Communications, LLC (“LaaSer”) and RapidSOS, Inc. (“RapidSOS”). LaaSer has a patented enhanced location information and call routing platform that is designed to deliver accurate location information using existing infrastructure. Southern Linc is currently in discussions with LaaSer to implement this location technology solution.

RapidSOS has developed a mobile application called *Haven* that determines the caller’s precise location using all available sensors on the device (e.g., GPS, WiFi, cell towers, Bluetooth beacons, barometric pressure sensor information) and routes the call to the correct PSAP based on the device location rather than by closest cell tower. Southern Linc is working closely with RapidSOS and its device manufacturer to evaluate potential implementation.

Additionally, Southern Linc will utilize West’s Location Performance Management (“LPM”) tool which compiles and aggregates data sets to help proactively manage and report on location accuracy and network performance. The tool will enable the Company to better manage E911 call locations and identify areas for improvement. The LPM has two main modules: Performance Monitoring Tool (“PMT”) and Accuracy Analysis Reporting (“AAR”). The PMT enables pinpointing of location performance issues, optimizing network functionality to certify location performance, performing risk management of position determination issues, and providing reports for KPIs, call results, and location server performance. The AAR provides a suite of reports for FCC location accuracy reporting compliance as well as reports used to assess location accuracy across the network, including the Live 911 Call Data Report, Location Accuracy Report, and PSAP Report required by FCC rules.¹²

V. STANDARDS ACTIVITY PARTICIPATION

Southern Linc has been involved in standards development efforts related to 911 location accuracy and has participated in working groups within ATIS and CTIA. Southern Linc has dedicated staff to represent the Company in key standards activities to support the industry’s development of 911 indoor location accuracy improvement capabilities standards. Key standards activity occurs in ATIS ESIF’s Emergency Services and Methodologies Subcommittee (“ESM”) and ATIS Emergency Location Task Force (“ELOC”).

ATIS ESIF ESM is responsible for performance metrics, test methodologies and source codes for 911 network deployment, establishing methodologies within testing regions, including determination of Test Bed location requirements and blending methodologies for assessing accuracy compliance. ATIS ELOC is responsible for developing the interface standards, functional decomposition, protocol and procedures for handling the technologies used to improve

¹² See 47 C.F.R. §§ 20.18(i)(3) and 20.18(k).

911 location determination, which includes reusing and enhancing existing protocols to support new location technologies, and developing new protocols.

Additionally, Southern Linc dedicated staff to represent the Company in working groups established by CTIA for oversight of the work establishing the NEAD and Test Bed. CTIA working groups include Test Bed, NEAD, Z-Axis, Standards, PSAP Implementation, Dispatchable Location Demonstration, and NEAD Outreach. Southern Linc participated in the NEAD Working Group which drafted and developed the NEAD Privacy and Security Plan consistent with FCC rules.¹³ The NEAD Privacy and Security Plan outlines how privacy and security safeguards are incorporated into the NEAD to comprehensively address cybersecurity and ensure protection of individuals' private information while also enabling service providers to provide PSAPs with a dispatchable location during 911 calls.

VI. CONCLUSION

Southern Linc is on track to meet the FCC's Wireless E911 Location Accuracy Requirements. The Company will continue to participate in various standards activities and work diligently with other stakeholders to improve indoor location accuracy. Southern Linc remains committed to improving location accuracy to better serve its customers during emergencies and will implement the technologies and policies necessary to do so.

¹³ *Fourth Report and Order* at ¶ 69.